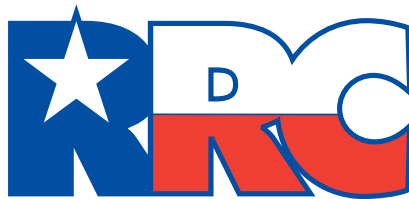


TEXAS LNG EXAMINATION STUDY GUIDE

Category 30
General Installers & Repairmen
Management Level



RAILROAD COMMISSION OF TEXAS

September 2012

NOTICE

This publication is intended for use in its entirety as a guide for persons preparing to take a Railroad Commission LNG qualifying examination. Any other use or distribution of this publication or use or distribution of any portion of this publication for any purpose whatsoever is considered by the Railroad Commission of Texas to be misuse of this publication.

This publication is not intended to be an exhaustive treatment of the subjects covered and should not be interpreted as precluding the use of other safety programs or procedures that comply with (1) applicable federal, state, and/or local code provisions, statutes, ordinances, and/or other regulations, including, but not limited to, the Railroad Commission of Texas' LNG Safety Rules (16 Texas Administrative Code, Chapter 14) and codes adopted by the Railroad Commission of Texas, and/or (2) other industry standards and/or practices.

Every effort was made to ensure that this publication was accurate and up-to-date as of the date of publication. The reader is cautioned, however, about reliance on this publication or any portion thereof at any time thereafter, particularly because changes in technology are likely to occur that might make portions of this publication inaccurate and out-of-date. The Railroad Commission of Texas assumes no liability, under any circumstances, for any actions taken or omissions made in reliance of the contents of this publication, from whatever source, or any other consequences of any such reliance.

All rights reserved. No part of this publication may be reproduced or transmitted in any form without written permission from the Railroad Commission of Texas.

Exam administration

Taking an examination in Austin

You may take any Railroad Commission qualifying examination in Austin without pre-registering (“walk-in”) on any business day, excluding holidays, from 8:00 a.m. to 12:00 noon at the Commission’s Alternative Fuels Training Center. The training center is located at 6506 Bolm Road, on the northwest corner of the intersection of Bolm Road and U.S. Highway 183.

Tuesdays and Thursdays are the preferred days for walk-in examinations.

(See map to Training Center on page 24.)

Taking an examination outside of Austin

You may also take any Railroad Commission qualifying examination at more than two dozen other locations statewide. Exam dates, times and locations are listed three months in advance on the Commission’s web site. To view a complete schedule, go to www.rrc.state.tx.us. From the drop-down menu under “Education and Training,” choose “Training Classes & Qualifying Exams” and click on “Class/Exam Schedule.” The online schedule has links to maps showing each class and exam location.

You must register at least two business days in advance to take an examination outside of Austin. To register online, go to www.rrc.state.tx.us. From the drop-down menu under “Education and Training,” choose “Training Classes & Qualifying Exams” and click on “Register Now.” The web site allows you to register up to four people for an examination.

When you register online, you will receive a return e-mail confirming the registration and the dates and locations of the exams. Registering online also ensures that you will receive advance notification of any changes in the examination date, time or location.

Payment for exams; LNG Form 2116; ID required

The fee is \$40.00 for each employee-level exam and \$70.00 for each management-level exam. Fees are non-refundable by state law, and cash cannot be accepted.

You may pay the required examination fee at any exam location by check or money order payable to the Railroad Commission of Texas. CNG Form 1016, “Application for Examination,” may also be completed at the examination site. Examinees must also present an official state-issued driver’s license or photo ID at the exam site.

You may also pay your examination fee by credit card in advance online. To pay by credit card, go to www.rrc.state.tx.us. From the drop-down menu under “Education and Training,” choose “Training Classes & Qualifying Exams” and click on “Pay Online.” Be sure to print out the confirmation page in Step 6. Make a copy of the confirmation page for your records and bring a copy with you to the examination site.

Closed-book examinations

All Railroad Commission management-level qualifying examinations are closed book. This study guide may not be used during any management-level examination.

Examination time limit

Railroad Commission LNG qualifying examinations must be completed within two hours after the examination is given to you, including any breaks you elect to take. The examination proctor is the official timekeeper. You must submit both the examination itself and your answer sheet to the proctor within the two-hour limit.

Grades, reports and retakes

The minimum passing grade is 75 percent on all Railroad Commission qualifying examinations.

Examinations administered at the Training Center in Austin are graded on-site, and examinees are immediately informed of the results. If you fail an examination that you took in Austin, you may retake that same examination only one additional time during a business day. Any subsequent examination must be taken on another business day, unless approved by the Commission.

Exams taken outside of Austin are graded as soon as possible, and the results of the examination are reported within 10 working days.

If you pass an examination, the Railroad Commission will issue you a blue certification card within 10 working days. You will be notified by letter if you fail an examination.

Contacts

Alternative Fuels Research and Education (AFRED)

Rayfield Hearne, Certification Manager	(512) 463-6845	rayfield.hearne@rrc.state.tx.us
Amber Flaherty, Examination Coordinator	(512) 463-6933	amber.flaherty@rrc.state.tx.us
Carol Goodman, Training Coordinator	(512) 463-2682	carol.goodman@rrc.state.tx.us

LP-Gas Operations

April Dawn Richardson, LP-Gas Safety	(512) 463-6935	april.richardson@rrc.state.tx.us
--------------------------------------	----------------	--

TEXAS LNG EXAMINATION STUDY GUIDE MANAGEMENT LEVEL CATEGORY 30 GENERAL INSTALLERS AND REPAIRMEN

Who should use this guide?

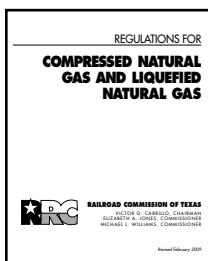
You should use this guide if you plan to take the Railroad Commission's Category 30 management-level qualifying examination for General Installers and Repairmen. This certification authorizes the sale, repair, service and installation of stationary containers and LNG systems.

What books do I need?

This examination tests your knowledge of the laws and standards that apply to the sale, repair, service and installation of stationary LNG containers and LNG systems in Texas.

These laws and standards are found in the Railroad Commission's *Regulations for Compressed Natural Gas and Liquefied Natural Gas* (16 Texas Administrative Code, Chapter 14), known informally as the Commission's LNG Safety Rules.

Where do I get the book?



You may download the current edition of the Railroad Commission's *Regulations for Compressed Natural Gas and Liquefied Natural Gas* free online. Go to the Commission's home page at www.rrc.state.tx.us. From the drop-down menu under "Education and Training," choose "Training Classes & Qualifying Exams" and click on "CNG/LNG Safety Rules (PDF)." You may also buy a printed copy of the book for \$10.00, tax included, by calling the Railroad Commission's publications office at (512) 463-7309.

Sections and topics

Before you take this examination you should know the definitions on pp. 9-12 of this study guide and the contents of the sections of the codes and standards listed below. The actual examination may not include questions on all of the listed sections and topics. The questions on the examination are not organized by topic as they are in this study guide.

Regulations for Compressed Natural Gas and Liquefied Natural Gas

§14.2013	Licenses and Related Fees
§14.2016	Licensing Requirements
§14.2019	Certification Requirements
§14.2049	Report of LNG Incident/Accident
§14.2101	Uniform Protection Requirements
§14.2104	Uniform Safety Requirements
§14.2107	Stationary LNG Storage Containers

§14.2110	LNG Container Installation Distance Requirements
§14.2113	Maintenance Tanks
§14.2116	Transfer of LNG
§14.2119	Transport Vehicle Loading and Unloading Facilities and Procedures
§14.2122	Transfer Systems, Including Piping, Pumps, and Compressors, Used for LNG and Refrigerants
§14.2125	Hoses and Arms
§14.2128	Communications and Lighting
§14.2304	General Facility Design
§14.2313	Fuel Dispensing Systems
§14.2316	Filings Required for Installation of Fuel Dispensers
§14.2319	Automatic Fuel Dispenser Safety Requirements
§14.2401	General Provisions for Piping Systems and Components
§14.2404	Piping Materials
§14.2407	Fittings Used in Piping
§14.2410	Valves
§14.2413	Installation of Piping
§14.2416	Installation of Valves
§14.2422	Pipe Marking and Identification
§14.2501	Liquid Level Gauging
§14.2504	Pressure Gauges
§14.2510	Emergency Failsafe
§14.2513	Electrical Equipment
§14.2607	Vehicle Fuel Containers
§14.2610	Installation of Vehicle Fuel Containers
§14.2613	Engine Fuel Delivery Equipment
§14.2616	Installation of Venting Systems and Monitoring Sensors
§14.2622	Installation of Valves
§14.2625	Installation of Pressure Gauges
§14.2628	Installation of Pressure Regulators
§14.2631	Wiring
§14.2634	Vehicle Fueling Connection
§14.2707	Testing Requirements
§14.2710	Markings
§14.2713	Pressure Gauge
§14.2722	Liquid Level Gauging Devices
§14.2728	Extinguishers Required
§14.2731	Manifests
§14.2734	Transfer of LNG on Public Highways, Streets, or Alleys
§14.2737	Parking of LNG Transports and Container Delivery Units, and Use of Chock Blocks
§14.2740	Uniform Protection Standards

§14.2746	Delivery of Inspection Report to Licensee
§14.2749	Issuance of LNG Form 2004 Decal

Texas Natural Resources Code

§116.031	License Requirement
§116.032	License and Registration Fees
§116.033	Application and Renewal Procedures
§116.034	Examination And Seminar Requirements
§116.0345	License or Registration by Endorsement
§116.0346	Provisional License Or Registration
§116.035	Denial of License
§116.036	Insurance Requirement
§116.037	Disciplinary Action
§116.038	Staggered Renewal of Licenses
§116.141	Injunctive Relief
§116.142	Criminal Penalty
§116.143	Administrative Penalty
§116.144	Penalty Assessment Procedure

Terms and definitions

NOTE: The list below is not exhaustive. You are responsible for knowing all the terms and definitions that apply to the LNG activities you will perform.

Regulations for Compressed Natural Gas and Liquefied Natural Gas

Aggregate water capacity is the sum of all individual container capacities as measured by weight or volume of water when the containers in a battery at an installation are full.

LNG Safety Rules, § 14.2007(2)

ASME means the American Society of Mechanical Engineers.

LNG Safety Rules, § 14.2007(6)

An **automatic fuel dispenser** is a fuel dispenser which requires transaction authorization.

LNG Safety Rules, § 14.2007(8)

Certified means authorized to perform LNG activities under the direction of a licensee; however, certification alone does not allow an individual to perform LNG activities that require licensing.

LNG Safety Rules, § 14.2007(10)

Combustible material is a solid material which, in the form in which it is used and under the conditions anticipated, can be ignited and will burn, support combustion, or release flammable vapors when subjected to fire

or heat.

LNG Safety Rules, §14.2007(11)

A **commercial installation** is an LNG equipment installation located on premises other than a single-family dwelling used primarily as a residence.

LNG Safety Rules, §14.2007(12)

A **container** is any LNG vessel manufactured to the applicable sections of the API Code, ASME Code, or DOT requirements in effect at the time of manufacture.

LNG Safety Rules, §14.2007(15)

Container appurtenances are components installed in container openings, including but not limited to pressure relief devices, shutoff valves, backflow check valves, excess flow check valves, internal valves, liquid level gauges, pressure gauges, and plugs.

LNG Safety Rules, §14.2007(16)

A **conversion** is the changes made to a vehicle to allow it to use LNG as a motor fuel.

LNG Safety Rules, §14.2007(17)

Design pressure is the pressure at which a system or portion of that system is designed to operate.

LNG Safety Rules, §14.2007(18)

A **dispensing system** is that combination of valves, meters, hoses, piping, electrical connections, and fuel connections used to distribute LNG to mobile or motor fuel containers.

LNG Safety Rules, §14.2007(20)

DOT means the United States Department of Transportation.

LNG Safety Rules, §14.2007(21)

A **fixed-length dip tube** is a pipe with a fixed open end positioned inside a container at a designated elevation to measure a liquid level.

LNG Safety Rules, §14.2007(26)

Ignition source means any item, substance, or event having adequate temperature and energy release of the type and magnitude sufficient to ignite any flammable mixture of gases or vapors that could occur at a site.

LNG Safety Rules, §14.2007(28)

LNG is natural gas, consisting primarily of methane that has been condensed to liquid by cooling.

LNG Safety Rules, §14.2007(37)

An **LNG system** is a system of safety devices, containers, and other LNG equipment installed at a facility or on a vehicle and designed for use in the sale, storage, transportation for delivery, or distribution of LNG.

LNG Safety Rules, §14.2007(38)

An **LNG transport** is any vehicle or combination of vehicles and LNG containers designed or adapted for use or used principally as a means of moving or delivering LNG from one place to another, including but not limited to any truck, trailer, semi-trailer, cargo tank, or other vehicle used in the distribution of LNG.

LNG Safety Rules, §14.2007(39)

A **mass transit vehicle** is any vehicle which is owned or operated by a political subdivision of a state, city, or county, and which is used primarily in the conveyance of the general public.

LNG Safety Rules, §14.2007(40)

The **maximum allowable working pressure** is the maximum gauge pressure permissible at the top of completed equipment, containers, or vessels in their operating position for a design temperature.

LNG Safety Rules, §14.2007(41)

A **mobile fuel container** is an LNG container mounted on a vehicle and used to store LNG as the fuel supply for uses other than motor fuel.

LNG Safety Rules, §14.2007(42)

The **point of transfer** is the point at which a connection is made to transfer LNG from one container to another.

LNG Safety Rules, §14.2007(53)

A **pressure relief valve** is a valve which is designed both to open automatically to prevent a continued rise of internal fluid pressure in excess of a specified value (set pressure) and to close when the internal fluid pressure is reduced below the set pressure.

LNG Safety Rules, §14.2007(54)

A **pressure vessel** is a container or other component designed in accordance with the ASME Code.

LNG Safety Rules, §14.2007(55)

PSIG means pounds per square inch gauge.

LNG Safety Rules, §14.2007(57)

A **public transportation vehicle** is a vehicle for hire or service to the general public, including but not limited to taxis, buses, and airport courtesy cars.

LNG Safety Rules, §14.2007(58)

A **special transit vehicle** is a vehicle primarily used by a school or mass transit authority for special transit purposes such as transport of mobility impaired individuals.

LNG Safety Rules, §14.2007(63)

A **trainee** is an individual employed by a licensee for a period not to exceed 45 days without that individual having successfully completed the required examinations for the LNG activities to be performed.

LNG Safety Rules, §14.2007(67)

Transfer area means that portion of an LNG refueling station where LNG is introduced into or dispensed from a stationary installation.

LNG Safety Rules, §14.2007(68)

A **transfer system** is all piping and equipment used in transferring LNG between containers.

LNG Safety Rules, §14.2007(69)

A **transport system** is any and all piping, fittings, valves, and equipment on a transport, excluding the container.

LNG Safety Rules, §14.2007(72)

An **ultimate consumer** is the person controlling LNG immediately prior to its ignition.

LNG Safety Rules, §14.2007(73)

A **vaporizer** is a device other than a container that receives LNG in liquid form and adds sufficient heat to convert the liquid to a gaseous state.

LNG Safety Rules, §14.2007(74)

Water capacity is the amount of water in gallons required to fill a container.

LNG Safety Rules, §14.2007(75)

Key topics

NOTE: The list below is not exhaustive. You are responsible for knowing all the facts, rules, standards and procedures that apply to the LNG activities you will perform, as well as the rules and standards highlighted in this guide.

As you study the applicable codes and standards, pay special attention to the facts, rules and procedures related to the following key topics. Then, when you take the examination, read each question very carefully.

GENERAL RULES FOR ALL STATIONARY LNG INSTALLATIONS

Uniform Protection Requirements

(c) The operating end of the container at a stationary LNG installation, including the material handling equipment, the entire dispensing system and any part of the LNG transfer system, dispensing system or storage container which is exposed to vehicular traffic must be protected from damage by the vehicular traffic.

The fencing or guardrails installed to protect a stationary LNG installation must extend at least 24 inches beyond any part of the LNG transfer system, dispensing system, or storage container.

(h) At least two monitoring sensors must be installed at all LNG stationary installations to detect hazardous levels of LNG.

Monitoring sensors at stationary LNG installations must activate at not more than 25 percent of the lower flammability limit of LNG.

All monitoring sensors must be installed and maintained in accordance with the manufacturer's instructions.

LNG Safety Rules, §14.2101

Uniform Safety Requirements

(b) Any stationary LNG container previously in LNG service which has not been subject to continuous LNG pressure or

inert gas pressure must be inspected to determine if the container must be leak-tested or recertified.

(d) When installed for use, containers must not be stacked one upon another except when designed by the manufacturer for stacking.

LNG Safety Rules, §14.2104

Stationary LNG Storage Containers

(b) ASME, DOT and API containers must be identified by attachment of a stainless steel nameplate in a location that will remain visible after the container is installed and by a method that will minimize corrosion of the nameplate, its means of attachment, and the container.

(d) Shop-fabricated and shop-tested LNG containers must be leak-tested to 90 percent of the pressure relief valve setting after being installed and filled with LNG.

LNG Safety Rules, §14.2107

Container Installation Distance Requirements

(a) LNG containers must be installed in accordance with the following minimum distance requirements:

(1) Containers with aggregate water capacities up to 15,540 gallons must be located at least 25 feet from any building, property line, stationary ignition sources, or other aboveground flammable liquids.

(2) Containers with aggregate water capacities from 15,541 to 93,240 gallons must be located at least 50 feet from any building, property line, stationary ignition sources, or other aboveground flammable liquids.

(3) Containers with aggregate water capacities of 93,241 gallons or more must be located at least 100 feet from any building, property line, stationary ignition sources, or other aboveground flammable liquids.

(4) Underground LNG containers must be located at least 15 feet apart, regardless of size.

(5) LNG dispensers or points of transfer must be located at least 25 feet from the nearest building not associated with the LNG facility and from any line of adjoining property that can be built upon.

(c) Stationary LNG containers and piping must not be placed in the area directly beneath or above an electric transmission, distribution, or customer service line and the area six feet to either side of that line.

LNG Safety Rules, §14.2110

SAMPLE QUESTION

Monitoring sensors at stationary LNG installations must activate at not more than _____ percent of the _____ flammability limit of LNG.

- A. 25 / lower
- B. 35 / lower
- C. 25 / upper
- D. 35 / upper

Answer: A

GENERAL RULES FOR LNG FUELING FACILITIES

General Facility Design

(b) Structures and support of LNG fueling facility equipment, piping, controls, and tanks must be constructed of noncombustible material.

(c) Dikes, grading, or diversion curbs must be provided to prevent combustible or hazardous liquids from encroaching on the LNG refueling facility.

(d) LNG must not be vented to the atmosphere under normal operations unless the vent leads to a safe point of discharge at an LNG fueling facility.

Vent pipes or stacks must have the open end suitably protected to prevent entrance of rain, snow, and other foreign material at an LNG fueling facility.

Vent stacks must have provision for drainage at an LNG fueling facility.

(g) LNG fueling facility containers may be sited above or below grade. Soil susceptible to freezing from contact with containers must be heated directly or protected with an air space.

(h) Containers having outer jackets made of materials subject to corrosion must be protected against corrosion.

(k) Temperature monitoring system must be provided at an LNG fueling facility where the foundations supporting cryogenic containers and equipment could be adversely affected by freezing or frost heaving of the ground.

LNG Safety Rules, §14.2304

Fuel Dispensing Systems

(f) Emergency shut-down devices must be distinctly marked for easy recognition according to the requirements of and must activate a valve installed at the dispensing area that shuts off the power and gas supply to the dispensers. ESD devices must be located as follows:

(1) For containers with water capacity of 93,240 gallons or less, an ESD device must be located between 35 and 50 feet from the container.

(2) For containers with water capacity of 93,241 gallons or more, an ESD device must be located between 60 and 75 feet from the container.

(g) Manually operated container valves must be provided for each container.

(i) The use of hoses or arms in a fueling installation is limited to:

(1) a vehicle fueling hose;

(2) an inlet connection to compression equipment; or

(3) a section of metallic hose not exceeding 36 inches in length in a pipeline to provide flexibility where necessary.

Metallic hose in a fueling installation must be installed so that it will be protected against damage and be readily visible for inspection. The manufacturer's identification must be retained for each section of metallic hose used.

(j) If the flow is away from the hose, a check valve may be used as the shutoff valve. If a liquid or vapor line has two or more legs, an emergency shutoff valve must be installed in each leg.

(k) The fill line on storage containers must be equipped with a backflow check valve to prevent discharge of LNG from the container in case of line, hose, or fitting rupture.

(l) A fueling connection and mating vehicle receptacle must be used to transfer LNG or gas vapor to or from the vehicle.

(m) An interlock device must be provided so that the hose coupling cannot be released while the transfer line is open. Interlock devices are not required for transports when transferring fuel to a stationary tank.

LNG Safety Rules, §14.2313

SAMPLE QUESTION

Fire extinguishers on a transport power unit must be mounted so that a visual inspection can determine whether the extinguisher is fully charged.

- A. True
- B. False

Answer: A

PIPING SYSTEMS AND COMPONENTS FOR ALL STATIONARY LNG INSTALLATIONS

Piping Materials

(a) Piping materials, including gaskets and thread compounds, must be suitable for use with LNG throughout the range of temperatures to which they will be subjected.

(c) Piping insulation used in areas where the mitigation of fire exposure is necessary must be made of material which will not propagate fire and must maintain any properties which are necessary during an emergency when exposed to fire, heat, cold, or water.

(f) All threaded piping must be at least Schedule 80.

LNG Safety Rules, §14.2404

Fittings Used in Piping

- (a) Cast iron, malleable iron, and ductile iron must not be used in fittings.
- (b) Threaded nipples must be at least schedule 80.
- (c) Bends are permitted only in accordance with ANSI B31.3, 329.
- (d) Solid plugs or bull plugs made of at least schedule 80 must be used for threaded plugs.
- (e) Compression-type couplings must not be used where they will be subjected to temperatures below -20 degrees Fahrenheit unless such couplings meet the requirements of ANSI B31.3, 318.

LNG Safety Rules, §14.2407

Installation of Piping

- (a) An LNG piping system with bolted connections at a stationary LNG installation must be designed to withstand thermal contraction and expansion.
- (b) LNG pipe joints of four-inch nominal diameter or less may be threaded where necessary for special connections to equipment, provided that the connection is not subject to fatigue-producing stresses.
- (c) Gasket material must withstand as much as practicable exposure to fire.
- (d) Piping and tubing must be installed as directly as possible with provisions for expansion, contraction, jarring, vibration, and settling.

Underground LNG piping must be buried at least 18 inches below the ground surface unless otherwise protected.

LNG Safety Rules, §14.2413

Installation of Valves

- (a) Cryogenic liquid valves must be installed at an angle greater than 45 degrees from horizontal.
- (b) Isolation valves must be provided on container, tank, and vessel connections, except connections that are blind-flanged or plugged.
- (f) Piping systems must be designed to limit the contained volume that could be discharged in the event of a piping system failure.

(g) Container connections larger than one-inch pipe size through which liquid can escape must be equipped with:

(1) A valve that closes automatically if exposed to fire ; or

(2) A remotely controlled, quick-closing valve that must remain closed except during the operating period; or

(3) A fail-closed valve; or

(4) A check valve on filling connections.

LNG Safety Rules, §14.2416

Welding at Piping Installations

Qualification and performance of welders must comply with ANSI B31.3.

LNG Safety Rules, §14.2419

Pipe Marking and Identification

(c) Piping must be identified by color-coding, painting or labeling so as to be readily readable for piping systems and components at stationary LNG installations.

LNG Safety Rules, §14.2422

Welding Pipe Tests

(e) Nondestructive examination methods, limitations on defects, qualifications of the authorized inspector and personnel performing the examination must meet the requirements of ANSI B31.3, 336.

(f) The test records and written procedures required when conducting nondestructive examinations of welded pipe at a stationary LNG installation must be maintained for the life of the piping system or until such time as a reexamination is conducted.

LNG Safety Rules, §14.2431

Purging of Piping Systems

Blow-down and purge connections must be installed to eliminate all hazards to a safe operating condition.

LNG Safety Rules, §14.2434

Pressure and Relief Valves in Piping

(a) Pressure relieving safety devices must be installed to minimize damage to equipment and personnel. The means for adjusting relief valve set pressure must be sealed.

(b) Thermal expansion relief valves must be installed to prevent overpressure in any section of cold liquid or cold vapor piping which can be isolated by valves.

(c) Thermal expansion relief valves must be set to discharge above the maximum pressure normally expected in the line but less than the rated test pressure of the line they protect.

(d) The Railroad Commission must approve the location for discharge for valves for stationary LNG installations.
LNG Safety Rules, §14.2437

Corrosion Control

(a) Underground and submerged piping must be protected and maintained in accordance with the National Association of Corrosion Engineers Standard RP-01-69M, Control of External Corrosion of Underground or Submerged Metallic Piping Systems.

LNG Safety Rules, §14.2440

Liquid Level Gauging

(a) At least one liquid level gauge on an LNG container at a stationary installation must be replaceable without taking the container out of operation.

(b) When the container filling rate is greater than 1.0% per day, the container must be provided with a high-liquid-level alarm which must be separate from the liquid level gauging device.

When the container filling rate is such that an alarm system is required, the alarm system must meet the following requirements:

(1) be set so that the operator will have sufficient time to stop the flow without exceeding the maximum permissible filling height

(2) be located so that it is visible and audible to personnel controlling the filling.

(c) Containers with a capacity of 93,240 gallons or less which are continuously attended during the filling operation may be equipped with trycocks in lieu of the high-liquid-level alarm.

LNG Safety Rules, §14.2501

Pressure Gauges

All LNG containers at stationary LNG installations must be equipped with a pressure gauge connected to the container at a point above the Maximum intended liquid level.

LNG Safety Rules, §14.2504

Vacuum Gauges

Vacuum-jacketed containers must be equipped with instruments or connections for checking the absolute pressure in the annular space.

LNG Safety Rules, §14.2507

Emergency Failsafe

Stationary LNG installations must be designed so that if power or instrument air fails, the system will go into a fail-safe condition that will be maintained until the operator can take appropriate action to either reactivate or secure the system.

LNG Safety Rules, §14.2510

Electrical Equipment

(a) All electrical equipment and wiring at an LNG refueling station must be installed in accordance with the applicable sections of NFPA 70, *National Electrical Code*.

(d) A primary seal must be provided between the flammable fluid system and the electrical conduit wiring system.

(f) Where primary seals are installed, drains, vents, or other devices must be provided for monitoring purposes to detect flammable fluids and leaking.

LNG, Safety Rules, §14.2513

Electrical Grounding and Bonding

(d) Grounding must be provided for tanks supported on nonconductive foundations.

LNG, Safety Rules, §14.2516

SAMPLE QUESTION

The emergency shutdown device at an LNG fuel storage installation that includes an automatic dispenser must be distinctly marked for easy _____.

- A. Maintenance
- B. Recognition
- C. Actuation
- D. Inspection

Answer: B

GENERAL REQUIREMENTS (ADMINISTRATIVE)

Report of LNG Incident/Accident

(a) If an incident or accident occurs during transport, as a result of a pullaway, or where LNG is or is suspected to be the cause, the licensee or non-licensee owning, operating, or servicing the installation must notify the Safety Division by telephone as soon as possible after the licensee or non-licensee has knowledge of the incident or accident if any of the following occurs:

- (1) a spill of 25 gallons or more of LNG;
- (2) property damage of \$1,000 or greater; or
- (3) an injury requiring transport to a medical facility.

(b) Any transport unit required to be involved in an accident where there is damage to the tank, piping appurtenances, or any release of LNG resulting from the accident must be reported to the Safety Division, regardless of the accident location. Any LNG-powered motor vehicle used for school transportation or mass transit, including any state-owned vehicle, which is involved in an accident resulting in a release of LNG or damage to LNG equipment must be reported to the Safety Division, regardless of the accident location.

(c) The telephone notification must include the following information:

- (1) the date and time of the incident or accident;
- (2) type of structure or equipment involved;
- (3) resident's or operator's name;
- (4) physical location;
- (5) number and type of injuries or fatalities;
- (6) whether fire, explosion, or leak has occurred;
- (7) whether LNG is currently leaking; and
- (8) whether immediate assistance from the division is requested.

(d) The individual making the telephone notification must leave his or her name and telephone number.

(e) Following the initial telephone report of any of the incidents or accidents described in this section, the licensee must file LNG Form 2020 with the Railroad Commission. The form must be postmarked within 14 calendar days of the date of initial notification to the Railroad Commission.

LNG Safety Rules, §14.2049

Licenses, Related Fees

(b)(4) A Category 30 license for general installers and repairmen authorizes the sale, repair, service and installation of stationary containers and LNG systems.

LNG Safety Rules, §14.2013

Licensee Requirements

(c) Licensees must maintain a copy of the current version of the *Regulations for Liquefied Natural Gas* adopted by the Commission and must provide at least one copy to each company representative and operations supervisor.

(d) Licensees and operations supervisors at each outlet must have all current licenses and certificates available for inspection during regular business hours.

(f)(2) if a person's license has been expired for more than 90 calendar days but less than one year, the person must submit a renewal fee that is equal to two times the renewal fee.

(f)(3) if a person's license has been expired for one year or longer, that person may not renew, but must comply with the requirements for issuance of an original license.

LNG Safety Rules, §14.2016

Certification Requirements

(a)(1) No individual may work or be employed in any capacity which requires contact with LNG or LNG systems until that individual has submitted to and passed a commission examination

(a)(5)(B) Successful completion of any required examination must be credited to the individual.

An individual who has been issued a certification card must make the card readily available and must present the card to any Commission employee or agent who requests proof of certification.

(a)(5)(C) Any individual who fails an examination must be immediately disqualified from performing any LNG activities covered by that examination.

(d) To maintain active status, a certificate holder must pay the \$25 annual renewal fee on or before May 31 of each year.

LNG Safety Rules, §14.2019

Entry on Property; Inspection and Investigation

(a) A commission-authorized person may enter the premises of a licensee or any building or other premises open to the public or inspect any LNG system or motor vehicle equipped with LNG equipment any reasonable time.

(b) Any authorized commission representative may enter any building or premises where an accident has occurred in which LNG was a probable cause for purposes of investigating the cause, origin, and circumstances of such accident.

During the Commission investigation of a LNG related accident the Commission may request that any state or local authority having jurisdiction take appropriate action as may be necessary for preservation of property and premises.

Texas Natural Resources Code, §116.015

Licensing Requirements

(a) A person is required to obtain a license from the commission to engage in any of the following activities:

(1) work that includes the manufacture, assembly, repair, testing, sale, installation, or subframing of LNG containers for use in this state;

(2) systems work that includes the sale, installation, modification, or servicing of LNG systems for use in this state, including the installation, modification, or servicing by any person, except a political subdivision, of a LNG motor fuel system or mobile fuel system on a vehicle used in the transportation of the general public; or

(3) product work that includes the sale, storage, transportation for delivery, or dispensing of LNG state.

(b) A license obtained by a partnership, corporation or other legal entity extends to the entity's employees who are performing LNG work, provided that each employee is qualified and registered as required by rules adopted by the commission.

(c) No license is required by an original vehicle manufacturer or a subcontractor of such manufacturer for the installation and sale of a new LNG system when such system is installed on a new original vehicle fueled by LNG.

Texas Natural Resources Code, §116.031

Insurance Requirements

(a) All licensees must acquire and maintain appropriate workers' compensation or coverage for its employees under policies of work-related accident, disability, and health insurance, including coverage for death benefits, from an insurance carrier authorized to provide coverage in this state and other insurance coverage required by the commission in the amounts required by the commission.

Texas Natural Resources Code, §116.036

Disciplinary Action

(e) During a proceeding hearing for disciplinary action involving a LNG licensee, if the Commission determines that a probable violation or noncompliance concerning LNG motor vehicles constitutes an immediate danger to the public health, safety, or welfare, it must require the immediate cessation of the probable violation or noncompliance

Texas Natural Resources Code, §116.037

Warning Tags

(a) A warning tag may be attached by an employee, agent, or inspector of the commission to any LNG motor vehicle required to be registered, declared unsafe or dangerous for service or any LNG equipment or system that is defective or any system in a conspicuous location.

(b) A person may not sell, furnish, deliver, or supply compressed natural gas for use or consumption by or through a motor vehicle or system in a public place or operate a motor vehicle having LNG equipment to which a warning tag is attached.

(c) A warning tag may be removed on approval of the commission or by a person designated by the commission to remove the tag.

Texas Natural Resources Code, §116.103

& 1, 1, 1 & 1
32021232, 1
, 1

